

## ADAM C. LANZAROTTA, PH.D.

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### EDUCATION

#### **Doctor of Philosophy (Ph.D.) in Analytical Chemistry**

May, 2010, MIAMI UNIVERSITY, Oxford, OH  
Weidner Scholarship (2009), Graduate Student Achievement Award (2007),  
William Hale Charch Scholarship (2005)

#### **Bachelor of Science (B.S.) in Forensic Science**

July, 2005, EASTERN KENTUCKY UNIVERSITY, Richmond, KY  
Honors Scholar, cum laude, Dean's Award (2003), Honors Program Scholarship  
(2001-2005), Honors Program Book Award (2001-2005)

#### **Specialized Training**

- Advanced Mass Spectrometry, Cincinnati, OH (2018)
- Advanced Chromatography, Atlanta, GA (2018)
- Basic Separation Science, San Juan, Puerto Rico (2016)
- Infrared Spectral Interpretation, Bowdoin College, Brunswick, ME (2015)
- Basic Mass Spectrometry, Denver, CO (2015)
- Regulatory Chemistry, Atlanta, GA (2009)
- Personal Safety Training: Verbal Judo, San Antonio, TX (2008)
- Basic Food and Drug Law, San Antonio, TX (2008)
- Evidence Development, San Antonio, TX (2008)
- Regulatory Science, Rockville, MD (2008)
- Expert witness testimony training (2008)

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### PROFESSIONAL EXPERIENCE

**Chemist**, Trace Examination Section, U.S. FOOD & DRUG ADMINISTRATION, FORENSIC  
CHEMISTRY CENTER, Cincinnati, OH, (February 2008 – Present)

General Responsibilities: forensic examination (photodocumentation, instrumental  
analysis, report writing, expert testimony) and method development of compromised  
FDA-regulated products using vibrational spectroscopic instrumentation

Position Description:

- Operate and maintain highly technical scientific equipment
- Formulate and conduct research that evaluates new instrumentation and its  
applicability to the required analyses
- Analyze samples by reviewing background material, pertinent agency  
regulations, federal laws, and other relevant material
- Serve as a scientific advisor to FDA's Office of Regulatory Affairs (ORA) field  
professionals

- Provide advice and serve as a technical expert concerning instrumentation and methodology problems
- Organize and present seminars and training sessions on specialized instrumentation and related analytical methods and research
- Write professional reports of findings and offer them for publication in recognized scientific journals
- Collaborate with scientists from other government, industry and academia
- Testify as an expert witness in criminal cases

#### Supervisory Details

- Trace Examination Section Acting Supervisor from July 11, 2016 through August 5, 2016.
- Trace Examination Section Acting Supervisor from July 27, 2017 through October 7, 2017.

**Graduate Student**, Molecular Microspectroscopy Laboratory, MIAMI UNIVERSITY, DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY, Oxford, OH, (August 2005 – May 2010)

General Responsibilities: teaching assistantships, coursework, written cumulative exams, oral exams, research, development of an original research proposal and presenting at professional conferences.

Position Description: Operate and maintain infrared and Raman macro and microspectroscopic instruments. Design, construct, evaluate and present/publish theoretical and empirical performance metrics of novel custom-built infrared macro and microspectroscopic instruments.

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#### **ACCOMPLISHMENTS**

##### Leadership in the field of Vibrational Spectroscopy

- Instructor for IM116: Import Operations and Import Entry Review (2016, 2017). Presented “A Field Method for Aiding in the Detection of Suspect Counterfeit / Diverted Products”.
- Session chair for Eastern Analytical Symposium: Analysis of Counterfeit Pharmaceuticals (2016 Conference)
- Governing Board member of Eastern Analytical Symposium and Exposition (2015 – 2017).
- Content advisory group member as a subject matter expert for FDA Foundation Course LB 208: Spectroscopy (2013 – present).
- Advisory council member for the Bachelor of Science program in forensic science and investigations at Miami University through Dr. Janet Marshall and Dr. Susan S. Marine (2014 – present).
- Forensic Chemistry Center Research Steering Committee member (2014 – 2016).
- Society for Applied Spectroscopy member (2005 – present), Local Chapter Councilor (2014 – present).
- Coblentz Society member (2005 – present).
- Mentor for FCC employees/interns
  - FCC analyst (2016-present)
    - Project: GC/FT-IR/MS analysis of compounds that are difficult to identify using GC/MS independently
  - College senior at Miami University (2014)

- Project: Examination of synthetic cannabinoids using FT-IR and Raman spectroscopy
- College senior at Ohio University (2010)
  - Project: Examination of PDE-5 analogs using FT-IR and Raman spectroscopy
- High school senior (2010)
  - Project: Adding infrared spectra of standard reference materials to FCC spectral libraries

#### General Sample Analysis

- Expertise regarding the analysis of counterfeit, adulterated, tampered and diverted FDA-regulated products including prescription tablets, over-the-counter tablets, illicit tablets, dietary supplements, combination drugs, packaging materials, multi-layered laminates, injectables and many others
- Results and expert testimony have helped lead to the recall, removal and/or destruction of countless dangerous goods from the supply chain as well as several criminal convictions that have been accompanied by significant penalties.
  - Provided field and analytical support for the largest raid of nitrous oxide in the United States, which involved 17 businesses in the Los Angeles area, included 26 search warrants, and resulted in the seizure of over 900 gas cylinders with a street value of \$20 million.
  - The president of a drug company was convicted for orchestrating a \$50 million drug diversion scheme, was found guilty of conspiracy, 15 counts of mail fraud and one count of making false statements to the FDA. The defendant was sentenced to 15 years in prison and imposed a \$1.4 million-dollar money judgment. Testimony occurred on February 20, 2018 and February 21, 2018 in Nashville, Tennessee.
  - A primary care physician was charged with, and found guilty of, 162 counts of health care fraud and was sentenced to 1 year in prison and pay \$1.1M in restitution. Testimony occurred on April 18, 2016 in Gainesville, Florida.
  - A mother was accused of repeatedly administering eye drops adulterated with bleach to a 14-month old child. This sample required the examination of antibiotic eye drops for the presence of sodium hypochlorite (bleach). The defendant was found guilty of first degree child assault on October 4, 2013 and was sentenced to 40 years in prison on November 15, 2013. Testimony occurred on September 17, 2013 in Tacoma, Washington.

#### Focused Sample Analysis: Examination of Human Autopsy Tissue for the Presence of Silicone

- Developed and later published a moderately sensitive method using macro FT-IR and an exceptionally sensitive method using FT-IR spectroscopic imaging.
  - The work has allowed FDA/FCC to become a nationally recognized authority for detecting silicone in autopsy tissue. Since 2010, he has contributed to more than 20 city, state and federal silicone-related criminal cases, which have included the examination of hundreds of items from more than 60 sample submissions.
    - Provided analytical support for prosecutions at the federal level for the Federal Bureau of Investigation as well as at the state and local levels for the Philadelphia Police Department (Pennsylvania), Houston Police Department (Texas), Broward County Sheriff's Department (Florida), Hidalgo County Sheriff's Office (Texas), Dallas Police Department (Texas) and Santa Ana Police Department (California).

- Testified three times as an expert witness and results have helped lead to several felony convictions including third degree murder, depraved heart murder, criminally negligent homicide, conspiracy to commit culpable negligence manslaughter, and many others. Sentences have resulted in anywhere from several months to life in prison and fines up to \$100,000.
  - An unlicensed woman who illegally injected individuals with silicone was accused of causing the death of one of her patients. The defendant was found guilty of murder and practicing medicine without a license and was sentenced to 60 years in prison. Testimony occurred on March 23, 2017 in Dallas, Texas.
  - An unlicensed woman who illegally injected individuals with silicone was found guilty of practicing medicine without a license and assault. She was sentenced to a 10-year suspended prison term and 180 days in county jail. Testimony occurred on November 7, 2016 in McAllen, Texas.
  - An unlicensed woman who illegally injected individuals with silicone was accused of causing the death of one of her patients. Testimony occurred on March 3, 2015 in Philadelphia, Pennsylvania and the defendant was found guilty of third degree murder on March 9, 2015. She was sentenced to serve 10 to 20 years in prison.

#### Primary Contributor to FDA's Opioid Project

- Helped write two proposals for laboratory support to address the proposed increase in package inspections for these types of products at international mail facilities and express courier hubs.
- Responsibilities for Phase 1 of the project have included organizing the purchase of equipment/materials, evaluating field deployable instrumentation that has the potential to be purchased, evaluating the performance of instrumentation that has been purchased, streamlining the use of limited resources, updating/purchasing spectral libraries, tracking analyst time dedicated to the project and writing status updates.
- Responsibilities for Phase 2 of the project have included transferring methods developed in the laboratory to the field.
  - Operation Snapshot – developed methods were employed by eight analysts and 14 OCI import agents using eight devices at eight IMF locations (Chicago, Los Angeles, Miami, New York, New Jersey, San Francisco, Honolulu and San Juan) to examine and detain dozens of violative FDA-regulated products (August 14, 2018 – August 16, 2018).
  - CBP pilot study – developed methods were employed at the FedEx Hub in Memphis, Tennessee along with CBP analysts to evaluate the performance of instrumentation being developed for use at IMFs (July 30, 2018 – August 2, 2018).
- CD3+/TruScan handheld Raman spectrometer demonstration for the two members of the US House of Representatives, the FDA associate commissioner for regulatory affairs and top-level FDA management at the Newark, NJ international mail facility (May 11, 2018)
- CD3+/TruScan handheld Raman spectrometer demonstration for the FDA commissioner and senior FDA management at the JFK international mail facility (August 25, 2017)

#### Providing Laboratory Support for FDA's Office of Criminal Investigations (OCI)

- Responsible for helping OCI purchase handheld Raman spectrometers, training OCI agents how to use the devices, updating these devices with newly encountered drug products, helping agents troubleshoot device problems, providing real-time laboratory support for OCI agents using the devices

- Developed a field method for detecting sildenafil in suspect tablets using handheld Raman spectrometers and silver colloids, which is currently employed by FDA/OCI Special Agents (2017).
- Expertise with on-site collection and/or examination of compromised FDA-regulated products using portable devices to prioritize samples sent to the laboratory for more comprehensive analyses
  - Operation Snapshot – analysis of samples seized from an international mail facility (Honolulu, Hawaii, August 2018)
  - Analysis of samples seized from mail facilities (Tampa, Florida, April 2017)
  - Analysis of suspect counterfeit bulk ingredients with handheld infrared and Raman instruments (Garden City, New York, June 2014)
  - Analysis of gas from 115 suspect nitrous oxide-containing cylinders in five days (Irvine, California, June 2013)
  - Analysis of violative dietary supplements with handheld infrared and Raman instrumentation during a search warrant (Detroit, MI, September 2012)
  - Analysis of suspect products including cathinones (bath salts) at a mail blitz with handheld infrared and Raman instrumentation (Louisville, KY, September 2011).

#### Collaboration with United States Pharmacopoeia

- Initiator and point of contact for helping the United States Pharmacopoeia (USP) with their monograph modernization initiative to include ATR-FT-IR spectroscopy as an option for identifying drug substances.
  - Established an agreement where USP would donate any standard reference materials requested by FCC/FDA with the understanding that FCC/FDA would collect ATR-FT-IR spectra of the standards and send the spectra to USP for their equivalence study. In addition, FCC/FDA also agreed to donate any spectra of USP standard reference materials currently in FCC libraries. Since the collaboration began, USP has donated 29 standard reference materials and FCC/FDA has shared 291 ATR-FT-IR spectra.
- Contributed to 104 monographs being updated to explicitly permit the use of ATR-FT-IR spectroscopy for drug identification. Before this cooperative research project began in 2014 there were only 25 monographs that specifically allowed ATR-FT-IR to be used for chemical identification. When the newest edition of the USP 41-NF 36 became official on August 1, 2018, this number more than quintupled to 129. As a result, ORA regulatory analysts are now able to conserve a significant amount of time and effort by using ATR-FT-IR instead of outdated and time-consuming methods such the KBr method.

#### Research/Methods Development

- Current Research
  - Over 50 professional presentations and 20 peer-reviewed publications regarding forensic examination and method development of compromised FDA-regulated products using infrared and Raman spectroscopic instrumentation (namely infrared spectroscopic imaging and gas chromatography with infrared detection) and evaluating instrument performance for the analysis of said products.
  - Projects involve developing laboratory-based and field-based methods to improve the efficiency and efficacy of vibrational spectroscopic instrumentation used for identifying and characterizing drug substances.
    - Developed methods for pure substance identification and determining authenticity of suspect tablet using handheld Raman spectrometers.
    - Spearheaded the acquisition of FDA's first FT-IR spectroscopic imaging microscope to overcome this fundamental limitation of FT-IR spectroscopy as

well as other fundamental limitations of chromatographic and mass spectrometric techniques employed at FCC to keep the laboratory state-of-the-art and to push FCC's capabilities to the forefront.

- Authored several publications and presentations that have described the use of FT-IR spectroscopic imaging for identifying individual ingredients in a wide variety of multi-component samples.
- Championed the purchase of FDA's first fully integrated GC/FT-IR/MS instrument, which is currently one of only a handful of these instruments in the entire world, to identify analytes with non-specific fragmentation patterns and analytes that co-elute with positional isomers.
  - Authored several publications and presentations that have described the use GC/FT-IR/MS for simultaneously identifying, confirming and/or quantitating drug substances to improving efficiency, increasing sample throughput, decreasing consumption of laboratory resources (solvents, chemicals, consumables, etc.), and thus cost.

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**HONORS (LAST 5 YEARS, FULL LIST IS AVAILABLE UPON REQUEST)**

- 24) July 2018 – Quality step increase (“exceptional” rating on yearly performance review).
- 23) July 2018 – ORA Outstanding Service Award for helping the United States Pharmacopoeia (USP) with their monograph modernization initiative to include ATR-FT-IR spectroscopy as an option for identifying drug substances.
- 22) September 2017 – Incentive award for trial preparation and testimony in Federal and/or state court in support of judicial actions involving FDA-regulated products between July 16, 2016 and August 18, 2017.
- 21) September 2017 – Incentive award for outstanding efforts in original research and in collaborations with other divisions within the agency to publish articles in peer-reviewed journals.
- 20) September 2017 – Incentive award for serving as Acting TES supervisor during an extended detail.
- 19) September 2017 – Incentive award for contributing to promoting the public health mission by developing an accepted laboratory plan to address the proposed increase in package inspections for opioid-containing products at IMFs and ECHs. This team also researched and prepared requisition packages for instrumentation and standard reference materials to support the plan and worked towards hiring goals for the project. This was all accomplished in an extremely short time frame.
- 18) August 2016 – Commissioner's Special Citation as a member of the Mozambique Pombe Chemical/Microbiological Analytical Team. For exceptional analytical investigation resulting in the first known identification of bongkreikic acid and the associated bacteria in Mozambique Pombe, implicated in over 70 deaths.
- 17) June 2015 – Group Recognition Award as a member of the Veterinarian Pharmacy Compounding Group for exceptional collaboration in ensuring the safety of compounded veterinary drugs.

- 16) August 2014 – Individual award for developing a method for collecting a representative sample of nitrous oxide gas in the field.
- 15) August 2014 – Mothershead Trial Testimony Group for outstanding performance when providing expert testimony in a trial in which a mother was convicted of knowingly administering bleach contaminated eye drops to her own child. The defendant was convicted and is currently serving a 40-year prison sentence.
- 14) August 2014 – Silicone Injection Analysis Team for continued work on numerous cases in the analysis of samples related to silicone injections: suspect and authentic silicone fluids, bodily tissues and exudates.
- 13) June 2014 – Quality step increase (“exceptional” rating on yearly performance review).
- 12) June 2014 – GS 13 merit-based promotion.
- 11) June 2014 – Group Recognition Award as a member of the Ophthalmic Drops Forensic Analysis Group for exemplary performance in the forensic analysis of eye drops contaminated with bleach that were administered to a child.
- 10) August 2013 – Group Recognition Award as a member of the Illegal Silicone Injection Analysis Team. For outstanding laboratory work in the analyses of autopsy tissues, bodily fluids and syringes associated with illegal body enhancements leading to arrests and criminal prosecutions.
- 9) August 2013 – Group Recognition Award as a member of the Counterfeit and Unapproved Oncology Drug Analytical Work Group. For developing and implementing physical and chemical analysis methodology for numerous pharmaceutical productions to support the investigation of counterfeit and unapproved oncology drugs.
- 1-8) Available upon request.

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**PUBLICATIONS (LAST 5 YEARS, FULL LIST IS AVAILABLE UPON REQUEST)**

- 20) Adam Lanzarotta, Lisa Lorenz, Sara Voelker, Travis M. Falconer and JaCinta S. Batson. Forensic Drug Identification, Confirmation, and Quantitation using Fully Integrated Gas Chromatography with Fourier Transform Infrared Detection and Mass Spectrometric Detection. *Applied Spectroscopy*. **2018**, 72, 750-756.
- 19) Adam Lanzarotta, Lisa Lorenz, JaCinta S. Batson and Cheryl Flurer. Development and Implementation of a Pass/Fail Field-Friendly Method for Detecting Sildenafil in Suspect Pharmaceutical Tablets using a Handheld Raman Spectrometer and Silver Colloids. *Journal of Pharmaceutical and Biomedical Analysis*. **2017**, 146, 420-425.
- 18) Adam Lanzarotta, Travis Falconer, Heather McCauley, Lisa Lorenz, Douglas Albright, John Crowe and JaCinta Batson. Simultaneous Orthogonal Drug Detection using a Fully Integrated GC/FT-IR/MS. *Applied Spectroscopy*, **2017**, 71, 1050-1059.



- 17) Adam Lanzarotta, Sara Andria and John Crowe. "A Systematic Procedure for Screening Counterfeit Pharmaceutical Tablet Coatings and Cores Utilizing Infrared Spectroscopy", *Journal of Regulatory Science*, **2017**, 5, 21-28.
- 16) Sara E. Kern, Lisa M. Lorenz, Adam Lanzarotta, Elisa A. Nickum and Jonathan Litzau. Isolation and Structural Characterization of a New Tadalafil Analog (Chloropropanoylpretadalafil) Found in a Dietary Supplement. *Journal of Pharmaceutical and Biomedical Analysis*. **2016**, 128, 360-366.
- 15) Taryn Winner, Adam Lanzarotta and Andre J. Sommer. Analysis of Counterfeit Coated Tablets and Multi-Layered Packaging Materials using Infrared Microspectroscopic Imaging. *Microscopy and Microanalysis*. **2016**, 22, 649-655.
- 14) Adam Lanzarotta. Analysis of Forensic Casework Utilizing Infrared Spectroscopic Imaging. *Sensors*. **2016**, 16, 1-12.
- 13) Adam Lanzarotta and Caroline Machal Kelley. Forensic Analysis of Human Autopsy Tissue for the Presence of Polydimethylsiloxane (Silicone) and Volatile Cyclic Siloxanes using Macro FT-IR, FT-IR Spectroscopic Imaging and Headspace GC-MS. *Journal of Forensic Sciences*. **2016**, 61, 867-874.
- 12) Adam Lanzarotta, Mark Witkowski, Sara Andria and John Crowe. The Establishment of Performance Verification Procedures for Fourier Transform Infrared Spectrometers. *Journal of Regulatory Science*, **2015**, 1, 1-8.
- 11) Adam Lanzarotta, Nicola Ranieri, Douglas Albright, Mark Witkowski, JaCinta Batson and Moseley Fulcher. Analysis of Counterfeit FDA-Regulated Products at the Forensic Chemistry Center: Rapid Visual and Chemical Screening Procedures Inside and Outside of the Laboratory. *American Pharmaceutical Review*, **2015**, 18, 24-29.
- 10) John B. Crowe, Adam Lanzarotta, Mark R. Witkowski, and Sara E. Andria. Analysis of Hypodermic Needles and Syringes for the Presence of Blood and Polydimethylsiloxane (Silicone) Utilizing Microchemical Tests and Infrared Spectroscopy. *Journal of Forensic Sciences*. **2015**, 60, 1078-1084.
- 9) Adam C. Lanzarotta. Approximating the Detection Limit of an Infrared Spectroscopic Imaging Microscope Operating in an Attenuated Total Internal Reflection Modality: Theoretical and Empirical Results for an Instrument Using a Linear Array Detector and a 1.5-mm Germanium Hemisphere Internal Reflection Element. *Applied Spectroscopy*. **2015**, 69, 205-214.
- 8) Adam Lanzarotta and John Crowe. "Infrared Macroscopic and Microscopic Examinations of a Multi-Component Sample: Spectral Subtraction and Particle Isolation", *Laboratory Information Bulletin*, V. 30 No. 7 (**2014**) LIB 4568.
- 1-7) Available upon request.

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**PRESENTATIONS (LAST 5 YEARS, FULL LIST IS AVAILABLE UPON REQUEST)**

- 52) Adam Lanzarotta, Sara Kern, Travis Falconer, Kirk Gaston and David Skelton. Combating the Opioid Crisis Using Complementary Handheld and Field-Portable Analytical Instruments. Presented at the FDA Office of Research Coordination and Evaluation (ORCE) Summit June 27-28, 2018 in Rockville, MD.



- 51) Adam Lanzarotta, Travis Falconer, Sara Kern, Lisa Lorenz, Sarah Voelker, Timothy Yi and David Skelton. "FDA Forensic Chemistry Center Opioid Project: Handheld/Field Portable Group Status Update". Presented to FCC staff. January 30, 2018.
- 50) Adam Lanzarotta, R. Duane Satzger, JaCinta Batson and Mark Witkowski. "FDA Forensic Chemistry Center: Laboratory Support for an Initiative to Increase Package Inspections for Opioid Products at International Mail Facilities (IMFs) and Express Courier Hubs (ECHs). Presented at a Department of Defense sponsored workshop entitled "Detection of Pharmaceutical-Based Agents – Learning from the Synthetic Opioid Crisis". Laurel, MD, October 17, 2017.
- 49) Adam Lanzarotta, Lisa Lorenz, JaCinta S. Batson and Cheryl Flurer. "Development and Implementation of a Pass/Fail Field-Friendly Method for Detecting Sildenafil in Suspect Pharmaceutical Tablets using a Handheld Raman Spectrometer and Silver Colloids." Invited presentation for the SCIX Annual Conference, Reno, NV, October 8, 2017, abstract number 9341.
- 48) Adam Lanzarotta. "Mid-Infrared Microspectroscopy and Microspectroscopic Imaging". Presented to the FDA Foundation Course LB 208: Spectroscopy. May 2017, April 2018.
- 47) Adam Lanzarotta. "Mid-Infrared Spectral Interpretation". Presented to the FDA Foundation Course LB 208: Spectroscopy. May 2017, April 2018.
- 46) Adam Lanzarotta and Nicola Ranieri. "A Field Method for Aiding in the Detection of Suspect Counterfeit / Diverted Products". Presented to the IM116 course: Import Operations and Import Entry Review. Rockville, MD, March, 2017.
- 45) Lisa Lorenz, Adam Lanzarotta and Sarah Voelker. Analysis of Ephedrine Alkaloids in Dietary Supplements using a Fully Integrated GC/FT-IR/MS. Presented at the Pittsburgh Conference, March 2017, Chicago, IL, abstract number 2390-2.
- 44) David S. Jackson, John B. Crowe, Lisa A. Kaine, Adam C. Lanzarotta, and Heather A. McCauley. The Indirect Detection of Bleach (Sodium Hypochlorite) in Bleach-Tainted Infant Eye Drops. Presented at the American Academy of Forensic Sciences Annual Conference, February 2017, New Orleans, LA, abstract number B177.
- 43) Adam Lanzarotta, Lisa Lorenz, Sarah E. Voelker and JaCinta S. Batson. Forensic Drug Identification, Confirmation and Quantitation Using a Fully Integrated GC/FT-IR/MS. Presented at the Eastern Analytical Symposium Annual Conference. Somerset, NJ, November 15, 2016, abstract number 187.
- 42) Adam Lanzarotta. Analysis of Forensic Casework Utilizing Infrared Microspectroscopic Imaging. Presented at the Microscopy and Microanalysis Annual Conference. Columbus, OH, July 27, 2016, abstract number 674.
- 41) Valerie M. Toomey, Adam C. Lanzarotta and Lisa M. Lorenz. Identification of a purported dietary supplement ingredient using a multi-pronged analysis approach. Presented at the 2016 American Chemical Society Central Regional Meeting (CERM), Covington, KY, May 18, 2016, abstract number 2489624.

- 40) Sara E. Kern, Elisa A. Nickum, Rick Flurer, Valerie M. Toomey, Lisa M. Lorenz, Adam Lanzarotta, Sarah E. Voelker and Jonathan Litzau. Phosphodiesterase type-5 (PDE-5) inhibitor trends in dietary supplements. Presented at the CDER/ORL Laboratory Operations Summit II. April 13, 2016.
- 39) Adam Lanzarotta. USP Monograph Modernization: Identification using ATR-FTIR Spectroscopy <197A>. Presented at the CDER/ORL Laboratory Operations Summit II. April 13, 2016.
- 38) Adam Lanzarotta and John Crowe. "A Field Method for Aiding in the Detection of Suspect Counterfeit / Diverted Products". Presented to the IM116 course: Import Operations and Import Entry Review. Rockville, MD, March 16, 2016.
- 37) Caroline Machal Kelley and Adam C. Lanzarotta. "Forensic Analysis of Human Autopsy Tissue for the Presence of Polydimethylsiloxane (Silicone) and Volatile Cyclic Siloxanes using Macro Fourier Transform Infrared (FT-IR) Spectroscopy, Micro FT-IR Spectroscopic Imaging and Headspace Gas Chromatography with Mass Spectrometric Detection". Presented at the American Academy of Forensic Sciences Annual Conference. Orlando, FL, February 2016, abstract number B24.
- 36) Adam C. Lanzarotta. "Forensic Analysis of Tampered, Adulterated and Counterfeit FDA-Regulated Products using Physical and Chemical Separation Techniques" Invited e-seminar presentation for the journal *Separation Science*. November 2015.
- 35) Adam C. Lanzarotta. "Forensic Analyses using Infrared Spectroscopic Imaging". Presented at the Eastern Analytical Symposium. Somerset, NJ, November 2015, abstract number 451.
- 34) Nicola Ranieri, Adam Lanzarotta, Doug Albright, and Mark Witkowski. Detecting Counterfeit Pharmaceutical Products by the Food and Drug Administration's Forensic Chemistry Center (FCC) and FDA Fields using hand-held devices. Presented to the Investigative Consultants (an anti-counterfeit training organization) in Los Angeles, CA, June 29, 2015.
- 33) S. Frank Platek, Douglas C. Albright, JaCinta S. Batson, John B. Crowe, Moseley Fulcher, Stefanie L. Kremer-Heckman, Adam C. Lanzarotta, Nicola Ranieri, Mark R. Witkowski. "Applications of Light and Electron Microscopy to Forensic Casework at the US FDA". Presented at the Microscopy Society of the Ohio River Valley Spring 2015 Meeting, April 15, 2015, Cincinnati, OH.
- 32) Adam C. Lanzarotta. "Analysis of Counterfeit Products by the FDA Forensic Chemistry Center". Invited presentation for Eastern Analytical Symposium. Somerset, NJ, November 2014, abstract number 166.
- 31) Adam C. Lanzarotta and John Crowe. "Forensic Analysis of Tampered, Adulterated and Counterfeit FDA-Regulated Products using Solid-State Separation Techniques". Invited e-seminar presentation for the journal *Separation Science*. November 2014.
- 30) Adam C. Lanzarotta. "Analysis of Compromised FDA-Regulated Products by the Forensic Chemistry Center". Invited presentation for Dr. Tai's "Freshmen Chemistry" course at Miami University, Oxford, OH, October 30, 2014.
- 29) Adam C. Lanzarotta. "Analysis of Compromised FDA-Regulated Products by the Forensic Chemistry Center". Invited presentation for Dr. Marine's "Forensic Science Survey" course at Miami University, Oxford, OH, September 19, 2014.

- 28) Adam Lanzarotta. "Mid-Infrared Spectroscopic Imaging". Presented to the FDA Foundation Course LB 208: Spectroscopy. August 2014, September 2015.
- 27) Adam Lanzarotta. "Mid-Infrared Applications and Data Analysis". Presented to the FDA Foundation Course LB 208: Spectroscopy. August 2014, September 2015, May 2017, April 2018.
- 26) Adam Lanzarotta. "Mid-Infrared Theory and Instrumentation". Presented to the FDA Foundation Course LB 208: Spectroscopy. August 2014, September 2015, May 2017, April 2018.
- 25) Adam C. Lanzarotta. "Analysis of Adulterated Products by the FDA Forensic Chemistry Center". Invited presentation for Dr. Marshall's "Chemistry & the Culture of Food" course at Miami University, Oxford, OH, March 13, 2014.
- 24) Adam C. Lanzarotta. "Approximating Theoretical and Empirical Detection Limits of Active Pharmaceutical Ingredients in Low, Moderate and High-Interfering Matrices utilizing Macro Infrared Spectroscopy and Micro Infrared Spectroscopic Imaging". Presented at the International Forum on Process Analytical Chemistry, Baltimore, MD, January 2013, abstract number 060.
- 1-23) Available upon request.

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**PROFESSIONAL CRITIQUES (LAST 5 YEARS, FULL LIST IS AVAILABLE UPON REQUEST)**

16 requests for critical reviews from 11 different journals:

- Applied Spectroscopy (4)
- Journal of Pharmaceutical and Biomedical Analysis (3)
- Forensic Science International (1)
- Public Library of Science (PLOS) One (1)
- Transactions on Biomedical Engineering (1)
- Annals of Medical and Health Sciences Research (1)
- Analytical Methods (1)
- Microscopy and Microanalysis (1)
- British Journal of Pharmaceutical Research (1)
- OncoTargets and Therapy (1)
- Chemical Papers (1)